



Claims 1-17 (cancelled previously)

Claims 18-37 (cancelled herewith)

38.(new) An imaging method of encoding a K space so as to fill said K space with orthogonal two directions as phase axes, said method comprising the steps of:

determining an encode order in consideration of distances from center of said K space to individual encode points and existing quadrants; and

encoding said K space in said determined encode order; wherein said determining step comprises:

defining N1(> 4) encode points as a first segment in order of decreasing distances from center of said K space, next defining N2 encode points as a second segment in order of decreasing distances from center of said K space, and similarly performing segmentation subsequently;

assigning serial numbers to said encode points of a first quadrant in said first segment in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a second quadrant therein in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a third quadrant therein in order of decreasing distances from center of said K space, and next assigning serial numbers to said encode points of a fourth quadrant therein in order of decreasing distances from center of said K space; and next assigning serial numbers to said encode points of a first quadrant in said second segment in order of decreasing distances

from center of said K space, next assigning serial numbers to said encode points of a second quadrant therein in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a third quadrant therein in order of decreasing distances from center of said K space, and next assigning serial numbers to said encode points of fourth quadrant therein in order of decreasing distances from center of said K space, and similarly assigning serial numbers subsequently; and wherein

said encoding of said K space is done in order of said determined serial number to thereby collect data.

39.(new) The method of claim 38, wherein order of said second, third, fourth and first quadrants, order of said third, fourth, first and second quadrants, or order of said fourth, first, second and third quadrants is used in place of said order of said first, second, third and fourth quadrants.

40.(new) The method of claim 38, wherein order of said fourth, third, second and first quadrants, order of said third, second, first and fourth quadrants, order of said second, first, fourth, third quadrants, or order of said first, fourth, third and second quadrants is used in place of said order of said first, second, third, and fourth quadrants.

41. (new) The method of claim 38, wherein  $N1 \geq 12$ .

42.(new) The method of claim 39, wherein  $N1 \geq 12$ .

43. (new) The method of claim 40, wherein  $N1 \geq 12$ .

44.(new) The method of claim 38, wherein an imaging region is scanned with a X direction as a read axis and Y and Z directions as phase axes; and wherein said K space is of a YZ-K space, and said center is of a YZ-K space; and wherein

said encoding is in said YZ-K space thereby to perform 3D scan.

45.(new) An imaging system for encoding a K space so as to fill said K-space with orthogonal two directions as phase axes to thereby collect data, said system comprising:

means for setting an encode order in consideration of distances from center of said K space to individual encode points and existing quadrants; and

means for encoding said K space in said set encode order to thereby collect data; wherein said means for setting comprises:

means for defining N1 ( $> 4$ ) encode points as a first segment in order of decreasing distances from center of said K space, next defining N2 encode points as a second segment in order of decreasing distances from center of said K space and similarly performing segmentization subsequently; and

means for assigning serial number to said encode points of a first quadrant in said first segment in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a second quadrant therein in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a third quadrant therein in order of decreasing distances from center of said K

space, and next assigning serial numbers to said encode points of a fourth quadrant therein in order of decreasing distances from center of said K space; and next assigning serial numbers to said encode points of a first quadrant in said second segment in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a second quadrant therein in order of decreasing distances from center of said K space, next assigning serial numbers to said encode points of a third quadrant therein in order of decreasing distances from center of said K space, and next assigning serial numbers to said encode points of a fourth quadrant therein in order of decreasing distances from center of said K space, and similarly assigning serial numbers subsequently.

46. (new) The system of claim 45, wherein said space is a YZ-K space, and said center is center of said YZ-K space.

47.(new) The system of claim 45, wherein said means for assigning serial numbers sets order of said second, third, fourth and first quadrants, order of said third, fourth, first and second quadrants or order of said fourth, first, second and third quadrants in place of said order of said first, second, third and fourth quadrants.

48.(new) The system of claim 46, wherein said means for assigning serial numbers sets order of said second, third, fourth and first quadrants, order of said third, fourth, first and second quadrants, or order of said fourth, first, second and third quadrants in place of said order of said first, second, third and fourth quadrants.

49.(new) The system of claim 45, wherein said means for assigning serial numbers sets order of said fourth, third, second and first quadrants, order of said third, second, first and fourth quadrants, order of said second, first, fourth and third quadrants, or order of said first, fourth, third and second quadrants, in place of said order of said first, second, third, and fourth quadrants.

50. (new) The system of claim 46, wherein said means for assigning serial numbers sets order of said fourth, third, second and first quadrants, order of said third, second, first and fourth quadrants, order of said second, first, fourth and third quadrants, or order of said first, fourth, third, and second quadrants, in place of said order of said first, second, third, and fourth quadrants.

51.(new) The system of claim 45, wherein  $N1 \geq 12$ .

52.(new) The system of claim 46, wherein  $N1 \geq 12$ .

53. (new) The system of claim 47, wherein  $N1 \geq 12$ .

54.(new) An imaging method of encoding a K space so as to fill said K space with orthogonal two directions as phase axes, said method comprising the steps of:

determining an encode order in consideration of distances from center of said K space to individual encode points and existing quadrants, wherein a plurality of sets of encode points are sequentially defined as sequential segments in order of decreasing distances from center of said K space, and then assigning sequentially serial numbers to encode points of first through

fourth quadrants in said first and subsequent segments in order of decreasing distances from said K space center; and

encoding said K space in order of the determined serial number, thereby to collect data.

55.(new) The method of claim 54, wherein an imaging region is scanned with an X direction as a read axis, and Y and Z directions as phase axes; and wherein said K space is of a YZ-K space, and said center is of a YZ-K space; and wherein

said encoding is in said YZ-K space thereby to perform a 3D scan.

56.(new) An imaging system for encoding a K space so as to fill said K space with orthogonal two directions as phase axes to thereby collect data, said system comprising:

means for setting an encode order in consideration of distances from center of said K space to individual encode points and existing quadrants; wherein a plurality of sets of encode points are sequentially defined as sequential segments in order of decreasing distances from center of said K space, and then assigning sequentially serial numbers to encode points of first through fourth quadrants in said first and subsequent segments in order of decreasing distances from said K space center; and

means for encoding said K space in order of the determined serial number, thereby to collect data.

57.(new) The system of claim 56, wherein said space is YZ-K space and said center is of said YZ-K space; and wherein

said means for setting comprises means for determining an encode order in consideration of distances from said center of said YZ-K space to individual encode points and existing quadrants; and

means for encoding in said YZ-K space in said set encode order to thereby perform a 3D scan.

58.(new) The method of claim 54, wherein said number of encode points in each set is two.

59.(new) The system of claim 56, wherein said number of encode points in each set is two.